Translation

PATENT COOPERATION TREATY

PCT/FR2003/000746

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 62765	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR2003/000746	International filing date (*day/month/year*) 07 mars 2003 (07.03.2003)	Priority date (*day/month/year*) 08 mars 2002 (08.03.2002)
International Patent Classification (IPC) or national classification and IPC G01S 5/14		
Applicant THALES		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
04 septembre 2003 (04.09.2003)	12 November 2004 (12.11.2004)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/FR2003/000746

I. Basis of the report

1. With regard to the elements of the international application:*

☐ the international application as originally filed

☒ the description:

pages 1-18, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the claims:

pages 1-8, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the drawings:

pages 1/2-2/2, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-8	YES
	Claims		NO
Inventive step (IS)	Claims	1-8	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-8	YES
	Claims		NO

2. Citations and explanations

1. Reference is made to the following document:

D1: EP-0886148A1

2. The prior art known from the available prior art does not appear to justify any objections to the present application under PCT Article 33(2) and (3).

3. The invention relates to a method and a device for determining the position of a mobile station relative to a known reference station position. The system is a differential GPS system and the stated problem is that of correcting errors caused by propagation differences related to the ionosphere when the mobile station is far away from the reference station.

4.1 D1, which is considered to be the closest prior art, describes the use of linear combinations of GPS satellite frequencies L1 and L2 both to reduce the initialisation time and to reduce ionospheric error. D1 reduces ionospheric error by calculating a corrected position in the form of a linear combination of two unambiguous positions, namely a

first position having a phase measurement obtained at frequency L1 and a second position having a phase measurement obtained at frequency L2 (see D1, column 3, lines 12-35 and claim 6).

4.2 The method according to the invention executes a series of mobile station position calculations on the basis of the same set of pseudo-distance measurements by using various linear frequency combinations, the estimated position at the start of the calculation being the position calculated in the previous step. In D1, only one position calculation is carried out and the single linear combination used for position calculation is degenerated because it corresponds to the two frequencies L1 and L2. Only two linear combinations are used in D1 in order to resolve initialisation processing ambiguity, and no linear combination is used for position calculation (see D1, column 2, lines 10-55). Therefore, D1 differs from the present invention.

5. None of the cited documents describes or suggests the features in claims 1 and 8, which consequently comply with the requirements of novelty and inventive step (PCT Article 33(2) and (3)).